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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,438	10/01/2003	Shinpei Nomura	H9876.0075/P075	5663

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EXAMINER

BROOME, SAID A

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,438

Applicant(s)

NOMURA, SHINPEI

Examiner

Said Broome

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,9-11,14-17,20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 9-11, 14-17, 20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/5/06 has been entered.

Response to Amendment

1. This office action is in response to an amendment filed 9/18/2006.
2. Claims 1, 2, 9-11, and 14-17 have been amended by the applicant.
3. Claims 5 and 6 have been cancelled by the applicant.
4. Claims 20 and 21 are original.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata (US Patent 6,088,006) in view of Tatsuzawa (US Patent 6,441,844), in further view of Aritake et al. (herein "Aritake", US Patent 5,872,590).

Tabata teaches the limitation of claims 1, 11, and 16 that describes object data of objects made of polygons having 3D coordinates to be viewed in a stereoscopic view, as stated in column 2 lines 61-67 and column 3 lines 1-18, is converted to parallax camera coordinate system data with their origins at parallax cameras for left and right eyes, as stated in column 3 lines 20-25. Tabata also teaches the storage of the parallax coordinate system object data for the left eye and the right eye in a video memory in column 12 lines 8-17, and is illustrated in Figure 7 as step 62 and 63 respectively. Tabata also teaches what is disclosed in the preamble of claim 1 in Figure 7, claim 11 in Figure 6, and claim 16 in Figure 6 as element 14, where a method, apparatus and storage medium for storing a program run in an apparatus for generating stereoscopic images are illustrated respectively. Tabata fails to teach the conversion of object data to be displayed in a planar view to reference camera coordinate system data with its origin at a reference camera, the storage of the reference camera coordinate system data for the left and right eye and the synthesizing of the stereoscopic and planar image data. Tatsuzawa teaches the conversion of object data to reference coordinate system data to be displayed in a planar view with its origin at a reference camera in column 9 lines 21-23, where it is described that a two-dimensional, or planar, image is projected from a front video camera, or reference camera, as shown in Figure 1 as element 18M. Tatsuzawa also teaches image data is collected from a reference camera as described in column 4 lines 34-38 and is shown to be sent to a solid-picture generation unit in Figure 7 as element M, which in combination with the storage of the left and right images as taught by Tabata can be utilized to store the captured reference camera image data. Tatsuzawa also teaches the synthesizing of the image data for the right and left eyes drawn, or stored, in the video memory and displaying the mixed stereoscopic and planar objects in

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column 2 lines 48-59 where it is described that the front video signal from the reference camera, which displays the planar or two-dimensional view of the image, and the right and left stereoscopic views of the image are simultaneously projected on a monitor. Tabata and Tatsuzawa fail to teach that the parallax angles for the left and right eyes are predetermined. Aritake teaches in column 10 lines 62-64 that the horizontal distance between the parallax cameras that contain equivalent angles of parallax is predetermined, therefore the parallax angles are also predetermined because angles of parallax contain a direct relationship to the distance between the camera which would enable the predetermination of the angles of parallax as well. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Tabata, Tatsuzawa, and Aritake, because this combination would provide accurate stereoscopic imaging of polygon objects without undesired artifacts or distorted images when the distance between the object and the observer changes as described in column 2 lines 50-60 of Tabata, in which these displaced 3D stereoscopic objects may also be observed without the need for additional display device such as an HMD, as described in column 2 lines 9-47 of Tatsuzawa, or specific optical system or glasses as described in column 2 lines 36-41 of Aritake.

Tabata and Tatsuzawa teach the limitations of claims 2 and 17 except for the viewing of object in a planar view outside of a stereoscopic viewable range of the stereoscopic display device in a 3D coordinate space. Aritake teaches that there is a 2D observing region, or planar view, which lies out of a 3D observing region, or 3D coordinate space, in which object data may be displayed in 2D in column 10 lines 17-24 and is also illustrated in Figure 7 as element 36. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata, Tatsuzawa and Aritake because this combination produces a planar view of the object data which

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lies outside of a stereoscopic viewable range of a stereoscopic display device therefore allowing observers outside of the 3D observing region of the stereoscopic display device to view 2D viewpoints of the object data.

Claims 9, 10, 14, 15, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata, Tatsuzawa and Aritake, and further in view of Hoglin (US Patent 5,949,477).

Tabata, Tatsuzawa and Aritake teach the limitations of claims 9, 10, 15, 20 and 21 (see Tabata, column 10 lines 6-9) where it is described that an operator inputs the angle of the parallax camera for the left and right eye. However, this combination of prior art fails to teach that the angles are adjustable in real time and are continuously and gradually varied as a result of the adjustment. Hoglin teaches that the angles of the parallax cameras are adjustable at all times by an observer in column 4 lines 45-47, therefore the angles are also continuously and gradually varied as a result of the adjustment by operations of the observer, as described in column 4 lines 29-45. It would have been obvious to combine the teachings of Tabata, Tatsuzawa and Aritake with Hoglin because this combination would provide for the continuous adjustment of parallax camera angles in real time depending on user input that would allow the adjustment of parallax camera during generation of stereoscopic images, resulting in an improved display.

Regarding claim 14, Tabata teaches the geometric unit, which comprises the stereoscopic image generating apparatus illustrated in Figure 6 as element 11, and the input unit also illustrated in Figure 6 as element 12. Tabata, Tatsuzawa and Aritake fail to teach the adjustment of the camera parallax angles in real time by the geometric unit from signal input from the input unit. Hoglin teaches that the angles of the parallax cameras are adjustable at all times by an

observer in column 4 lines 45-47. Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata, Tatsuzawa and Aritake with Hoglin because this combination would provide an adjustment of parallax camera angles in real time by a user that enables an improvement in the generated stereoscopic images due to the ability of the observer to adjust the parallax angles while viewing the image.

Response to Arguments

Applicant's arguments filed 9/18/2006 have been fully considered but they are not persuasive.

The applicant argues that the references Tabata in view of Tatsuzawa in further view of Aritake used in the 35 U.S.C. 103(a) rejection of claims 1, 2, 11, 16 and 17 do not teach image data displayed by mixing stereoscopic and planar objects. The examiner maintains the rejection because Tatsuzawa teaches that both the stereoscopic or solid-pictorial data and planar image data are displayed together as described in column 3 lines 19-22 ("The left and right video signals having the solid information with respect to the main picture are combined with the front video signal..."), where it is described that the solid information or stereoscopic image data and front video or planar image data are mixed. Tatsuzawa also describes displaying this combination in column 9 lines 62-64 ("Since the front video signal is contained in the solid-pictorial video signal, the solid picture as well as a plane picture can be also enjoyed.") and as shown in Figure 1 as elements 18L, 18R and 18M.

The applicant also argues that the references Tabata in view of Tatsuzawa in further view of Aritake do not teach that the parallax angles for the left and right eyes are predetermined. The

examiner maintains the rejection because Tatsuzawa teaches that the parallax angles for the left and right eyes are predetermined in column 4 lines 45-47 ("The left and right video cameras 18L and 18R are spaced uniformly and fixed at the same angle respectively."), therefore in view of Aritake that teaches in column 10 lines 62-64 ("The CCD cameras 42 and 44 are installed on the apparatus side with predetermined intervals in the horizontal direction for the 3D observing region..."), therefore the parallax angles are also predetermined because the equivalent angles of parallax contain a direct relationship to the predetermined distance between the camera which would enable the predetermination of the angles of parallax as well.

The applicant argues that Aritake's meaning of two-dimensional images is different from applicant's meaning of stereoscopic and two-dimensional objects. However, the examiner maintains the rejection because Aritake teaches stereoscopic objects as described in the applicant's Specification on page 6 line 9, in column 13 lines 50-65 ("Modeling data formed by a method of computer graphics has previously been recorded in the modeling data storing unit 62 in the image forming apparatus 26. The modeling data is formed as a set of several polygon data of the target object. When the observer position information is supplied to the rendering processing unit 64, the observing positions are used as observing point positions and it is calculated how the polygons which form the target object and have been stored in the modeling data storing unit 62 are seen from the observing point positions. That is, the position, size, color, texture, and the like are calculated and are developed as right-eye image data in the right-eye image frame buffer 66 with respect to the right-eye image and are developed as left-eye image data in the left-eye image frame buffer 68 with respect to the left-eye image.") and in the abstract lines 5-9 ("By setting an aperture position of a projection optical system, the right-eye image is

projected to the right-eye position of the observer and the left-eye image is projected to the left-eye position, thereby allowing a stereoscopic image to be observed.”), which are polygon objects. Aritake also teaches two-dimensional objects as described in the applicant’s Specification on page 7 lines 4-6, in column 20 lines 61-64 (“...a 2-dimensional image can be observed in the 2D observing region 36 other than the 3D observing region 20.”).

The applicant argues that Tatsuzawa does not teach mixed stereoscopic and planar view images are displayed on a display. The examiner maintains the rejection because Tatsuzawa teaches displaying image data that mixes stereoscopic and planar view images in column 4 lines 65-67 (“The front video signal SM and left and right video signals SL and SR obtained from the three video cameras 18 are supplied to a video signal generating part 20...”).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Tabata, Tatsuzawa, and Aritake, because this combination would provide accurate stereoscopic imaging of polygon objects without undesired artifacts or distorted images when the distance between the object and the observer changes as described in column 2 lines 50-60 of Tabata, in which these displaced 3D stereoscopic objects may also be observed without the need for additional display device such as an HMD, as described in column 2 lines 9-

47 of Tatsuzawa, or specific optical system or glasses as described in column 2 lines 36-41 of Aritake.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Tabata, Tatsuzawa, and Aritake, because this combination would provide efficient stereoscopic imaging without required any specific imaging devices or systems by maintaining the stereoscopic effect in response to changes in the distance from the observer and the observed object.

The applicant argues that the references Tabata, Tatsuzawa, and Aritake teach different non-combinable methods. However, Tabata, Tatsuzawa, and Aritake all teach the same method, as disclosed in the applicant's Specification on page 19 lines 26-27 – page 20 lines 1-2, of combining left and right images to produce stereoscopic image data, in the abstract lines 5-9 of Tabata, in column 9 lines 23-28 of Tatsuzawa, and in column 3 lines 19-21 of Aritake. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Tabata, Tatsuzawa, and Aritake, because this combination would provide accurate stereoscopic imaging of polygon objects without undesired artifacts or distorted images when the distance between the object and the observer changes as described in column 2 lines


50-60 of Tabata, in which these displaced 3D stereoscopic objects may also be observed without the need for additional display device such as an HMD, as described in column 2 lines 9-47 of Tatsuzawa, or specific optical system or glasses as described in column 2 lines 36-41 of Aritake.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome
10/27/06 


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER